A CLASSIFICATION OF THE NORTH AMERICAN MYRMELEONIDÆ.

BY NATHAN BANKS, WASHINGTON, D. C.

Some time ago in examining our species of ant lions I noticed that our two large genera, Myrmeleon and Brachynemurus, could readily be separated by the position of the origin of the radial sector; in one much nearer to the base of the wing than in the other. The characters previously used for Brachynemurus, as the forked costal veinlets, the length of the tibial spurs, etc., had not been satisfactory; and the discovery of this distinction led me to examine the other forms of the family with a view to their better classification.

It is evident that the double series of costals is not in itself of generic importance, for in Maracanda one species has a double series, and another species, closely allied, but one series; and, more than this, there are numerous gradations. The use of the tibial spurs, or, better, the length of the first tarsal joint, differs so much in species that appear otherwise closely allied that I cannot see how it can be of generic value. Yet definite differences in this matter, taken in conjunction with other important characters, may well serve to distinguish genera.

In applying the characters I have put chief rank on the origin of the radial sector. This point is best brought out by comparing the ending of the anal vein with the origin of the first fork of the radial sector. This divides the family, as represented in our fauna, into two groups, each of four genera. By such a division I was surprised to see that Myrmeleon was more closely allied to Acanthaclisis than to Brachynemurus, yet such a relation is sustained by many other characters.

Myrmeleon ingeniosus has long been recognized as differing considerably from the other species of Myrmeleon, and for it I have erected a new genus. Some might think that *Brachynemurus longipalpis* would also form a new genus, but it differs in no important character from other species of Brachynemurus, except the long palpi. There are other important structural variations in this genus; for example, the origin of the radial sector in the hind wings, and the amount of elevation of the vertex. Some specimens of *B. abdominalis* have an elevated vertex, but many Eastern examples have a very low vertex and more prominent eyes. But these variations, though very remarkable, do not appear to indicate specific differences.

TABLE OF GENERA.

1. Anal vein of fore wings ends much before the origin of the first fork of radial sector, often before the radial sector itself; six or more transversals basad of the radial sector; pronotum broad ..... *(Myrmeleoni)* 2.

   Anal vein of fore wings ends as far out or often farther than the origin of the first fork of radial sector, usually less than six cross veins basad of radial sector; pronotum often more slender ..... *(Dendroleoni)* 4.

2. Legs very short and stout, very hairy; tarsus I. much shorter than tibia I., large species ..... *Acanthaclisis.*

   Legs much more slender, not very hairy, tarsus I. scarcely shorter or usually longer than tibia I., usually smaller species ..... 3.

3. Spurs on leg I. scarcely longer than first tarsal joint; in hind wings usually three or four cross veins basad of radial sector; tarsus I. about as long as tibia I.; hind wings quite narrow, without large spots ..... *Myrmeleon.*

   Spurs on leg I. as long as first three tarsal joints; in hind wings usually but one cross vein basad of radial sector; tarsus I. shorter than tibia I.; hind wings quite narrow, without large spots ..... *Psammoleon.*

   Spurs on leg I. as long as first two tarsal joints; in hind wings about two cross veins basad of radial sector; legs very slender; tarsus I. shorter than tibia I.; antennæ very slender, scarcely clavate; hind wings broad, with large spots ..... *Glenurus.*

4. No tibial spurs; first tarsal joint of leg I. as long as next two; in hind wings the cubital fork runs parallel to anal for some distance ..... *Maracanda.*

   Spurs present ..... 5.

5. In hind wings cubital fork is very short, the anal bending down and not running parallel to the fork; usually but one cell crossed basad of radial sector in fore wings; legs very slender; spurs slender; first tarsal joint nearly as long as next three; pronotum slender; wings with large spots ..... *Dendroleon.*

   In hind wings the cubital fork runs parallel for some distance to the anal vein; spurs stouter; legs stouter; no large spots on wings ..... 6.

6. The cells basad of radial sector crossed and irregular; a double series of costals almost to the base; radial sector in hind wings arising before the origin of cubital fork..... *Calinemurus.*

Cells basad of radial sector rarely crossed, not irregular; rarely a double series of costals before the middle of wing; radial sector of hind wings often arising beyond origin of radial sector..... *Brachynemurus.*

Acanthaclisis, Rambur.

Our four species of this genus differ somewhat in structure, yet I hardly think sufficiently for a new genus. In *A. congener* the fork of the cubital does not run into the anal vein of hind wing as in *A. fallax.* The very stout legs are characteristic of this genus.

Myrmeleon, Linné.

In our forms there are two groups of species, those allied to *M. rusticus* and those near *M. immaculatus.* The species are very close to each other and difficult of separation.

Psammoleon, new genus.

One series of costals; radial sector arising near the middle of wing, the anal sector ending before its first fork; seven or eight transversals basad of radial sector in fore wing, but one in hind wings; in hind wings the anal vein runs close to the fork of cubitus and then turns away; hind wings narrow, as long as fore wings; palpi short, last joint of labials swollen; antennæ as long as head and thorax; prothorax about as broad as long; legs rather short and hairy; first tarsal joint of leg I. short, the spurs about as long as the first four joints together.

Type *P. ingeniosus,* Walk.

Glenurus, Hagen.

Our one species, *G. gratus,* is very easily known by its beautiful markings; the slender legs and antennæ readily separate this genus from the others of this section.

Dendroleon, Brauer.

Wings broad near tip, both pairs maculate; anal vein of fore wings ending slightly beyond origin of first fork of radial sector; about four cross veins basad of radial sector; cubital fork of hind wings short, soon bent down to anal vein; prothorax slender; legs very slender, anterior tarsus much shorter than tibia. But one species, *D. obsoletum,* Say.

Maracanda, McLachlan.

No spurs; anterior tarsus about as long as tibia; legs not slender, rather short; anal vein of fore wings ends very much beyond origin of first fork of radial sector; two to four cross veins basad of radial sector; in hind wings the cubital fork runs parallel to the anal vein for some distance; costals single or double. Three species, *M. conspersa*, *signata* and *Henshawi*.

Brachynemurus, Hagen.

Anterior tarsus nearly as long or longer than tibia I.; legs quite stout; anal vein of fore wings ends beyond the fork of radial sector; only three or four cross veins basad of radial sector; in hind wings the cubital fork runs parallel to anal for some distance; first tarsal joint of varying length; costals with some forked before pterostigma, often very few. A large genus, but it does not appear to be naturally divisible. *B. longicaudus* is the type.

Calinemurus, new genus.

Two series of costals nearly to base of fore wings; anal vein of fore wings ends much beyond the first fork of the radial sector; the transversals basad of radial sector being mostly divided; in hind wings the fork of cubitus runs nearly parallel to anal vein for some distance; venation in both wings is rather irregular; palpi short, last joint of labials swollen; antennæ about as long as head and thorax; prothorax longer than broad; legs quite short, anterior tarsus about as long as tibia; spurs as long as first joint. Male appendages long and slender. Type *C. californicus*, Bks. *B. fraternus*, Bks., also goes in this genus, and possibly *B. inscriptus*, Hag. I add the description of an interesting new species of Brachynemurus from New Mexico.

Brachynemurus tuberculatus, n. sp.

♀. Face yellowish, dark brown between antennæ and above, with a narrow line in middle, and one each side extending down towards the clypeus; above on vertex mostly dark, with a pale spot each side behind; antennæ brown, the second joint paler; palpi pale. Pronotum brown, with an indistinct pale stripe each side; thorax brown, a pale stripe on each side in front of the base of the fore wings; a pale spot on middle of hind border of mesothorax; two pale marks near middle of metathorax; pleura brown. Abdomen brown. Legs pale; apical half of femur brown; a brown ring on middle and near tip of tibia; and a broad

brown mark on middle and a small one at tip of tarsus. Everywhere with sparse short white hairs. Fore wings hyaline; veins mostly dark, sparsely interrupted with white, the costals mostly dark, most other veinlets pale, and with a brown dot near the middle of each; a large mark at end of radial sector; along median vein there is a broad dark, almost black, line, occasionally interrupted; at end of cubital vein is an oblique dark stripe; the veinlets near margin of wings are richly marked with dark brown; pterostigma brown basally, yellowish apically, not touching the costa. Hind wings hyaline; veins dark, not marked, except pterostigma fuscous, and a dot at end of radial sector. Palpi rather short; antennæ of moderate length; on vertex there is a prominent conical tubercle each side; pronotum short, broader than long, narrowed in front; mesonotum with each anterior lobe elevated into a conical tubercle; abdomen ♀ shorter than wings; legs rather short, spurs scarcely as long as first tarsal joint. Wings of moderate length, pointed at tips; hind pair narrow, but little shorter than fore pair; two series of costals in fore wings nearly to origin of radial sector; four cross veins basad of radial sector; anal vein ending near middle of hind margin.

Length, ♀: abdomen, 17 mm.; fore wing, 20 mm.

Mesilla, N. Mexico (coll. Morse).

SYNONYMY.

Fam. COCHLIDIONIDÆ, Grote, ex Hübner 1806.
= *Cochlidia*, Hübn., 1806.
= *Cochlidiæ*, Hübn., 1816.
= *Limacodidæ*, Auct., post 1825.
= *Eucleidæ*, Dyar, 1894.
= *Apodidæ*, Grote, 1895.
= *Heterogeneidæ*, Meyrick, 1895.
Family type: Cochlidion avellana (testudo).

Gen. COCHLIDION, Hübner, 1806.
= *Apoda*, Haworth, 1809.
= *Limacodes*, Latreille, 1825.

The above synonymy is proposed as being more correct than the terms employed for the group in current literature. The first plural term is employed by Hübner and should be retained. I cannot find that *Cochlidion* is preoccupied. In any event the correct generic title of the type should be used to form the family name.

A. RADCLIFFE GROTE, Roemer Museum, Hildesheim.